WHAT IS CLAIMED IS:

1. A multilayer piezoelectric component comprising:

a sintered ceramic compact body having opposite first and second sides;

first and second external electrodes respectively disposed on the first and second sides of the sintered ceramic compact body;

a plurality of internal electrodes stacked in the sintered ceramic compact body to overlap each other with ceramic layers disposed therebetween in the thickness direction, the plurality of internal electrodes arranged to be electrically connected to the first or second external electrode; and

a dummy electrode provided between an end of at least one of the internal electrodes opposite to the end connected to one of the external electrodes, and the other external electrode not connected to the at least one internal electrode at the height where the at least one internal electrode is located.

2. A multilayer piezoelectric component according to Claim 1, wherein the multilayer piezoelectric component constitutes a piezoelectric actuator.

3. A multilayer piezoelectric component according to Claim 2, further comprising at least one floating electrode layer provided in at least one of the ceramic layers between the adjacent internal electrodes in the stacking direction of the internal electrodes and/or the ceramic layers outside the outermost internal electrodes in the

stacking direction so as not to be electrically connected to the first and second external electrodes.

4. A multilayer piezoelectric component according to Claim 2, wherein the distance between the dummy electrode-side ends of the internal electrodes and the dummy electrode is about 100 μm or less.

5. A multilayer piezoelectric component according to Claim 1, wherein the multilayer piezoelectric component constitutes a multilayer piezoelectric resonator.

6. A multilayer piezoelectric component according to Claim 1, wherein the multilayer piezoelectric component constitutes a piezoelectric transformer comprising:

the sintered ceramic compact body having a substantially rectangular plate shape having the opposite first and second sides located on longer sides thereof, and opposite third and fourth sides located on shorter sides thereof;

the first and second external electrodes respectively disposed on portions of the first and second sides of the sintered ceramic compact body, which are close to the fourth side thereof;

a third external electrode disposed on the third side of the sintered ceramic compact body ;

the plurality of internal electrodes stacked in the sintered ceramic compact body to overlap each other with ceramic layers held therebetween in the thickness

direction, and the plurality of internal electrodes arranged to be electrically connected to the first or second external electrode; and

the dummy electrode provided between an end of at least one of the internal electrodes opposite to the end connected to one of the external electrodes, and the other external electrode not connected to the at least one internal electrode at the height where the at least one internal electrode is formed.

7. A multilayer piezoelectric component according to Claim 6, further comprising at least one floating electrode layer provided in at least one of the ceramic layers between the adjacent internal electrodes in the stacking direction of the internal electrodes and/or the ceramic layers outside the outermost internal electrodes in the stacking direction so as not to be electrically connected to the first and second external electrodes.

8. A multilayer piezoelectric component according to Claim 6, wherein the distance between the dummy electrode-side ends of the internal electrodes and the dummy electrode is in the range from a value that is substantially equal to the thickness of each of the ceramic layers between the internal electrodes to about 300 μm.

9. A multilayer piezoelectric component comprising:

a sintered ceramic compact body having opposite first and second sides;

first and second external electrodes respectively provided on the first and second sides of the sintered ceramic compact body;

a plurality of internal electrodes stacked in the sintered ceramic compact body to overlap each other with ceramic layers disposed therebetween in the thickness direction, and the plurality of internal electrodes arranged to be electrically connected to the first or second external electrode; and

at least one floating electrode layer provided in at least one of the ceramic layers between the adjacent internal electrodes in the stacking direction of the internal electrodes and/or the ceramic layers outside the outermost internal electrodes in the stacking direction so as not to be electrically connected to the first and second external electrodes.

10. A multilayer piezoelectric component according to Claim 9, wherein the multilayer piezoelectric component constitutes a piezoelectric actuator.

11. A multilayer piezoelectric component according to Claim 9, wherein the multilayer piezoelectric component constitutes a multilayer piezoelectric resonator.

12. A multilayer piezoelectric component according to Claim 11, further comprising insulating films arranged to cover exposed portions of the internal electrodes and/or the floating electrode on the first and second sides of the sintered ceramic compact body so that the internal electrodes are electrically connected to one of the first and second external electrodes but not electrically connected to the other external electrode, and the floating electrode is not electrically connected to the external electrodes;

wherein the internal electrodes and the floating electrode are arranged to extend up to the first and second sides of the sintered ceramic compact body .

13. A multilayer piezoelectric component according to Claim 11, further comprising at least one dummy electrode disposed between an end of at least one of the internal electrodes opposite to the end thereof electrically connected to one of the external electrodes, and the other external electrode not connected to the at least one internal electrode in a plane where the at least one internal electrode is located.

14. A multilayer piezoelectric component according to Claim 11, wherein a plurality of the floating electrodes are arranged in at least one of the ceramic layers between the adjacent internal electrodes in the stacking direction thereof and/or the ceramic layers outside the outermost internal electrodes in the stacking direction.

15. A multilayer piezoelectric component according to Claim 9, wherein the multilayer piezoelectric component constitutes a piezoelectric transformer comprising:

the sintered ceramic compact body having a substantially rectangular plate shape having the opposite first and second sides located on longer sides thereof, and opposite third and fourth sides located on shorter sides thereof;

the first and second external electrodes respectively provided on portions of the first and second sides of the sintered ceramic compact body, which are close to the fourth side thereof;

the plurality of internal electrodes stacked in the sintered ceramic compact body to overlap each other with ceramic layers disposed therebetween in the thickness direction, and to be electrically connected to the first or second external electrode; and

at least one floating electrode layer disposed in at least one of the ceramic layers between the adjacent internal electrodes in the stacking direction thereof and/or the ceramic layers outside the outermost internal electrodes in the stacking direction so as not to be electrically connected to the first and second external electrodes.

16. A method of manufacturing a piezoelectric actuator comprising the steps of:

printing an internal electrode and a dummy electrode on a green sheet;

stacking a plurality of green sheets each of which having the internal electrode and dummy electrode printed thereon, to obtain a layered product in which a plurality of the internal electrodes are extended to opposite first and second sides alternately in the thickness direction, and the dummy electrode is arranged between an end of the internal electrode opposite to the side extended to one of the sides and the other side to which the internal electrode is not extended;

firing the layered product to obtain a sintered ceramic compact body;

respectively forming first and second external electrodes on the first and second sides of the sintered ceramic compact body; and

applying a DC electric field between the first and second external electrodes to polarize the sintered ceramic compact body.

17. A method of manufacturing a piezoelectric actuator comprising the steps of:

printing an internal electrode and a dummy electrode on a green sheet;

printing a floating electrode on a green sheet;

stacking a plurality of green sheets, each having the internal electrode and the dummy electrode printed thereon, and the green sheet on which the floating electrode is printed, to obtain a layered product in which at least one floating electrode layer is arranged in at least one of the ceramic layers between the adjacent internal electrodes in the stacking direction and/or the ceramic layers outside the outermost internal electrodes in the stacking direction, a plurality of the internal electrodes are extended to opposite first and second sides alternately in the thickness direction, and the dummy electrode is arranged between an end of the internal electrode opposite to the side extended to one of the sides and the other side to which the internal electrode is not extended;

firing the layered product to obtain a sintered ceramic compact body;

respectively forming first and second external electrodes on the first and second sides of the sintered ceramic compact body; and

applying a DC electric field between the first and second external electrodes to polarize the sintered ceramic compact body.

18. A method of manufacturing a multilayer piezoelectric resonator comprising the steps of:

printing an internal electrode pattern on a green sheet to obtain a first green sheet;

printing a floating electrode pattern on a green sheet to obtain a second green sheet;

stacking the first and second green sheets to obtain a layered product in which the floating electrode pattern is arranged in at least one of the green sheet layers between the adjacent internal electrode patterns in the stacking direction and/or the green sheet layers outside the outermost internal electrode patterns in the stacking direction;

firing the layered product to obtain a mother sintered ceramic compact body;

polarizing the mother sintered compact by using the internal electrode patterns of the mother sintered ceramic compact body;

cutting the mother sintered compact to obtain a sintered ceramic compact body of a piezoelectric resonator unit; and

respectively forming first and second external electrodes on opposite first and second sides of the sintered ceramic compact body so that the internal electrodes are electrically connected to one of the external electrodes, and the floating electrode is not electrically connected to the external electrodes.

19. A method of manufacturing a multilayer piezoelectric resonator according to Claim 18, wherein the internal electrodes and floating electrode are formed to contact the first and second sides of the sintered ceramic compact body of the

multilayer piezoelectric resonator unit, and the step of respectively forming the external electrodes on the first and second sides of the sintered ceramic compact body comprises the steps of forming insulating films on the first and second sides of the sintered ceramic compact body to cover exposed portions of the internal electrodes and/or the floating electrode so that the internal electrodes are electrically connected to only one of first and second external electrodes but not electrically connected to the other external electrode, and the floating electrode is not electrically connected to the external electrodes, and respectively forming the first and second external electrodes on the first and second sides of the sintered ceramic compact body after forming the insulating films.

20. A method of manufacturing a multilayer piezoelectric resonator according to Claim 18, wherein in step of obtaining the first green sheet, the internal electrode pattern and dummy electrode pattern are printed on the green sheet.

21. A method of manufacturing a multilayer piezoelectric resonator according to Claim 18, wherein in the step of obtaining the second green sheet, the floating electrode pattern and dummy electrode pattern are printed on the green sheet.

22. A method of manufacturing a multilayer piezoelectric resonator comprising the steps of:

printing an internal electrode pattern and dummy electrode pattern on a green sheet to obtain a first green sheet;

stacking at least a plurality of the first green sheets to obtain a mother layered product;

firing the mother layered product to obtain a mother sintered ceramic compact body;

polarizing the mother sintered ceramic compact body by using the internal electrode pattern;

cutting the mother sintered ceramic compact body to obtain a sintered ceramic compact body of each piezoelectric resonator unit; and

forming first and second external electrodes on opposite first and second sides of the sintered ceramic compact body so that the internal electrodes are electrically connected to at least one of the external electrodes.

23. A method of manufacturing a piezoelectric transformer comprising the steps of:

printing an internal electrode and dummy electrode on a green sheet;

stacking a plurality of the green sheets each having the internal electrode and the dummy electrode printed thereon, to obtain a layered product having opposite third and fourth sides, in which the plurality of internal electrodes are extended to the opposite first and second sides alternately in the thickness direction, and the dummy electrodes are respectively arranged between the ends of the internal electrodes opposite to the ends extended to one of the first and second sides, and the other side to which the internal electrodes are not extended;

firing the layered product to obtain a sintered ceramic compact body;

respectively forming first and second external electrodes on portions of the first and second sides of the sintered ceramic compact body to which the internal electrodes are extended so that the external electrodes are close to the fourth side;

forming a third external electrode on the third side of the sintered ceramic compact body; and

applying a DC electric field between the first and second external electrodes and the third external electrode to polarize the sintered ceramic compact body.

24. A method of manufacturing a piezoelectric transformer comprising the steps of:

printing an internal electrode and dummy electrode on a green sheet;

printing a floating electrode on a green sheet;

stacking a plurality of the green sheets each having the internal electrode and the dummy electrode printed thereon, and the green sheet on which the floating electrode is printed, to obtain a layered product having opposite third and fourth sides, in which at least one floating electrode layer is arranged in at least one of the ceramic layers between the adjacent internal electrodes in the stacking direction and/or the ceramic layers outside the outermost internal electrodes in the stacking direction, the plurality of internal electrodes are extended to the opposite first and second sides alternately in the thickness direction, and the dummy electrodes are respectively arranged between the ends of the internal electrodes opposite to the ends extended to one of the sides, and the other side to which the internal electrodes are not extended;

firing the layered product to obtain a sintered ceramic compact body;

respectively forming first and second external electrodes on portions of the first and second sides of the sintered ceramic compact body to which the internal electrodes are led so that the external electrodes are close to the fourth side;

forming a third external electrode on the third side of the sintered ceramic compact body; and

applying a DC electric field between the first and second external electrodes to polarize the sintered ceramic compact body; and

applying a DC electric field between the first and second external electrodes and the third external electrode to polarize the sintered ceramic compact body.

25. An ink jet head comprising:

a nozzle for discharging ink;

an ink chamber communicated with the nozzle and comprising at least one flexible wall; and

a piezoelectric actuator according to Claim 2 arranged near the ink chamber and arranged to pressing the ink chamber.